NATIONAL WEATHER SERVICE INSTRUCTION 30-1203
OCTOBER 13, 2003

Maintenance, Logistics, and Facilities
Configuration and Data Management, NWSPD 30-12

CONFIGURATION MANAGEMENT FOR OPERATIONAL SYSTEMS

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives.

OPR: W/OPS13 (M. deTommaso) **Certified by:** W/OPS1 (M. Paese)
Type of Issuance: Routine.

SUMMARY OF REVISIONS

This Procedural Directive supercedes National Weather Service (NWS) Procedure Directive 30-1203, dated September 6, 2002, and includes clarification on 3rd party software configuration management requirements.

Signed by September 30, 2003

John McNulty, Jr. Date
Director, Office of Operational Systems

NWS Directives System - Configuration Management for Operational Systems

Table of Contents: Page

1 Purpose. NWS policy 30-12 establishes Configuration Management (CM) policy for NWS systems. CM controls the system engineering design through Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Audits.

a. Configuration Identification consists of identifying physical hardware and/or software with associated engineering drawings, baseline documentation, and physical identification of hardware and software via part number or file identifier.

b. Configuration Control consists of tracking and approving changes to baseline equipment.

c. Configuration Status Accounting consists of establishing a repository to record the current location, arrangement, and status of baseline equipment and documentation.

d. Configuration Audits provide a mechanism to verify baseline equipment conforms to specifications, engineering drawings, interface control documents, and other baseline documentation.

CM establishes a formal process for managing engineering information and changes. CM disciplines allow you to revise system capabilities, improve system performance, extend system life, reduce system costs, minimize risk or liability, and correct system defects. Through cost tradeoffs, Office of Operational Systems (OPS) designates CM control for a system based on the need to limit expensive re-procurement and re-engineering efforts. Not placing a system under CM control, or lack of adherence to established CM procedures, can result in:

(1) Excessive costs due to extensive engineering design changes.

(2) Unwarranted hardware and software repairs.

(3) Catastrophic hardware or software system failures, impacting the NWS' ability to perform its primary mission of protecting life and property.

2 Scope of Configuration Management. The Director of the OPS is responsible for designating systems under CM control. For these systems, the NWS CM discipline will encompass:

a. All configuration items that comprise the physical or logical elements of any operational NWS field system, including hardware, communications, and documentation. Hardware comprises data input, processing, storage, and output devices, as well as cables, and communication equipment. Software comprises the operating system, utility programs, firm ware, algorithms, and database management functions. Documentation includes system designs, specifications, drawings, technical manuals, test procedures, directories, and parts lists.

b. All direct interfaces from any operational NWS field subsystem to a system already under the NWS CM discipline will automatically come under NWS CM. Changes to the established configuration items of the subsystem will follow the CM policies and procedures established for the system it directly interfaces.

c. Operational systems funded and maintained by the NWS regions that are interfaced to a system under the NWS CM discipline, will be subject to NWS CM policies and procedures for their communications interface and those products transmitted over that interface to the host NWS CM system. Any candidate system for NWS CM requiring unique policies and procedures will require formal approval of the Director of the OPS. Prerequisites for approval include a definition of the CM baseline elements, the approval authority for proposed changes to each class of baseline elements, and the establishment of appropriate CM databases.

3 Process to Establish CM Control. OPS activates CM procedures for a system after the responsible system engineering group and CM conduct a Functional Configuration Audit/Physical Configuration Audit (FCA/PCA) to establish the system configuration baseline. OPS monitors baseline activities to ensure these actions comply with national CM requirements, offers CM guidance, and

participates in the FCA/PCA to provide CM oversight during the audit process. The System Engineering group is responsible for notifying the designated CM organization of baseline activities. CM organization for current systems are provided in Section 4. Before establishing a system baseline, the FCA/PCA audit team must certify the engineering drawing package and associated engineering documentation against the physical hardware and/or software and the requirements against the test results.

4 Systems Under Configuration Management. After OPS designates CM control for a system, all components of the system fall under CM policy and procedures. It is unallowable to segregate components of a system to avoid following CM procedures. OPS has designated CM control for the following systems:

Table 4-1. Designated CM Control

System Name	CM Responsible Organization	Date CM Control Established	CM Governing Document
Automated Surface Observing System (ASOS)	OPS13	September 4, 1992	Mil-STD 480
NEXRAD (WSR88D)	OPS42	January 7, 1993	Mil-STD 480
Console Replacement System (CRS)	OPS13	September 14, 1998	Best Commercial Practice (EIA-649)
Advance Weather Information Processing System (AWIPS)	OPS13	September 9, 1999	Mil-STD 973
Radiosonde Replacement System (RRS)	OPS13	Pending FCA/PCA	Mil-STD 973

5 National CM Processes. CM is handled across multiple organizations within the NWS. The Configuration Branch, (W/OPS13) in OPS, handles Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Audits for the equipment listed in Section 4 under their responsibility. Appendix A describes the responsibilities of the Configuration Branch.

The Program Branch, (W/OPS42) in OPS, is responsible for Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Audits for the NEXRAD. Appendix B describes the responsibilities of the Configuration Branch.

The Requirements and Change Management Branch, (W/OS12) in the Office of Climate, Water and Weather Services (OS), is responsible for the NWS Change Management Process for all NWS equipment. Appendix C lists the responsibilities of the Requirements and Change Management Branch. New contracts for equipment designated under CM control are administered from a variety of organizations within the NWS. This section will detail pertinent information for national CM processes.

5.1 Change Control Process. The Requirements and Change Management Branch Chief (W/OS12) develops and manages the NWS official Change Management process for operational systems. Please refer to NWS Instruction (NWSI) 10-103 for information pertaining to the NWS Change Management process.

For systems under NWS Configuration Management control, a change request must be approved before any change can be made. However, Electronic Systems Analysts (ESAs) and Regional Headquarters may authorize temporary modifications to restore critical system(s) operation in an emergency. After the emergency, the system(s) will be restored to original configuration. Each ESA will ensure all systems remain standardized under NWS policy and prescribed configuration.

5.2 Engineering Management Reporting System. The Engineering Management Reporting System (EMRS) is used to obtain completed configuration change information for systems under CM control. Please refer to NWS Instruction 30-2104, Maintenance Data Documentation for instructions on using EMRS. The ESA is responsible for coordinating, managing, validating, and recording all configuration changes (e.g., modifications, requests for change, maintenance notes) to assigned systems performed by Government and/or contractor personnel. The ESA is also responsible for ensuring accountability for the coordination, management, validation, completion, and EMRS submission of each configuration change.

5.3 Contract Administration for Equipment Under CM Control. The Program Manager for the equipment contract is responsible for coordinating CM sections of the contract Statement of Work (SOW), with OPS configuration management whenever a new SOW is being created for equipment under configuration control or whenever a SOW for equipment under configuration control has been modified. OPS Configuration Management will review and provide comment on the CM sections of the SOW, including Data Item Description information for CM contract deliverables.

6 Locally Administered CM Procedures. If a NWS Headquarters Office Director, Region Director, or the Director for National Center for Environmental Prediction chooses to administer their own CM procedures for a system, or any part thereof, they must provide a mechanism to track the Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Audits of the equipment. Locally administered CM procedures must be documented in supplemental procedural directives to this national directive. OPS will review proposed supplemental CM procedural directives to ensure they comply with national CM requirements and avoid unnecessary

duplication of efforts. Thereafter, OPS will periodically audit locally administered CM processes and make requests for locally-controlled configuration status accounting information to ensure compliance.

APPENDIX A - Configuration Branch Responsibilities

Table of Contents: Page

1 Configuration Branch (OPS13). The Configuration Branch Chief develops and manages CM processes and is responsible for Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Audits of operational systems listed in Section 4 under its CM control. The Configuration Branch Chief will:

a. Apply consistent and systematic methods for the identification of equipments, documents, drawings, and data lists defining system baselines.

b. Develop CM policies and procedures.

c. Design and maintain the Configuration Management Information System (CMIS) containing configuration identification, baseline documentation, site configuration, and authorizing change document information.

d. Provide CM direction and guidance to assure systems and components are documented and reflect performance, functional, and physical requirements.

e. Compile and publish configuration reports.

f. Initiate periodic audits of system configurations to ensure compliance.

g. Maintain the repository of configuration baseline documentation in the CM Technical Reference Library (TRL).

h. Maintain the software CM repository of production software using a 3rd party software development model. To perform this responsibility, OPS13 needs to validate a Software Listing package for each new software release for systems under CM control. The Software Listing package must include a DAT tape/CD of all source code, compilation tools, scripts, and any other software that makes up the complete software load. In addition, the Software Listing package must include the Version Description Document, all new requirements, and any discrepancy documentation/trouble reports to provide a complete validation review and accountability package for the new version of software. The responsible software development organization is responsible for delivering the Software Listing package to the OPS13 TRL. Once it is logged into the TRL, it is verified by the OPS13 CM Analyst.

i. Provide CM guidance during the NWS acquisition process to ensure adequate CM practices and data requirements are employed.

j. Ensure close-loop implementation of configuration changes affecting baseline equipment and documentation.

APPENDIX B - Radar Operations Center Program Branch Responsibilities

Table of Contents: Page

1 Radar Operations Center Program Branch (OPS42). The Radar Operations Center (ROC) Program Branch, CM Team, develops and maintains effective and efficient CM processes and is responsible for Configuration Identification, Configuration Control, Configuration Status Accounting, and Configuration Audits of the NEXRAD Generation Radar System (WSR-88D). The ROC Program Branch, CM Team, manages the WSR-88D tri-agency change process and provides the administrative and technical structure in support of the tri-agency Configuration Control Board.

The Configuration Management Team will:

a. Ensure the life-cycle management of WSR-88D System Configuration and its associated technical data package.

b. Ensure the accuracy of the WSR-88D engineering drawings, associated lists, and baseline specifications.

c. Establish and maintain the NEXRAD Technical Data Repository to include the Agile Configuration Status Accounting System, Razor Software Configuration Management System, and the Dynamic Object-Oriented Requirements System (DOORS). Agile is used for hardware Configuration Control and Configuration Status Accounting. Razor is used for Software Configuration Control, Configuration Status Accounting, and Build Management. DOORS manages system, functional, performance, design, and test requirements at all levels.

d. Incorporate changes, generated by approved Engineering Change Proposals (ECPs), Engineering Change Orders (ECOs), and Specification Change Notices (SCNs), into the WSR-88D Technical Data Package.

e. Track and facilitate configuration changes through the review cycle.

f. Control the hardware and software product baselines for the system and network.

g. Conduct Configuration Audits to ensure the integrity of the WSR-88D System Baselines.

h. Establish a cost-effective and efficient closed-loop Software Build, Release, and Distribution System for WSR-88D System Software.

The ROC Program Branch Chief will act as the final releasing authority for the baseline technical documentation.

APPENDIX C - Requirements and Change Management Branch Responsibilities

Table of Contents: Page

1 Requirements and Change Management Branch (OS12). The Requirements and Change Management Branch Chief develops and manages the NWS official Change Management process for operational systems. The Requirements and Change Management Branch Chief coordinates with NWS organizations to resolve proposed changes. The Requirements and Change Management Branch Chief will:

a. Coordinate and validate new and existing system requirements.

b. Coordinate review of proposed changes to determine effects on hardware, software, baseline documentation, logistics, communications, and procedures; required resources; required technical expertise; and interaction with other systems.

c. Coordinate costs for each proposed change.

d. Prepare change proposals for decision disposition by the appropriate authority.

e. Maintain change status tracking information.

f. Verify completion of approved changes and track closure of change documents.